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## Description

# WASHING MACHINE BASE FOR SECURING A CENTRAL MECHANISM

### BACKGROUND OF INVENTION

[0001] This patent relates to appliance bases. More particularly, this patent relates to an appliance base that can cushion and protect a washing machine and secure a washing machine mechanism suspended below the washer tub.

[0002] Base pads, sometimes referred to as carriers, skids, pallets or simply bases, are used to cushion and protect products such as large appliances during assembly, storage and transport. Numerous appliance bases are known in the art, including bases made of wood, plastic, corrugated paper, and composite bases made of a combination of materials. Sonoco Development, Inc., the owner of the present invention, owns a number of patents in this field, including U.S. Patent Nos. 6,155,527 and 6,264,157.

[0003] Top-loading washing machines present a special challenge for the industrial packaging industry, particularly in the design of the base. Top-load washing machines typically comprise a tub suspended from the appliance cabinet, a central pivoting agitator mounted inside the tub, and a transmission operably connected to the agitator and extending below the tub, where it is connected to a motor by a belt or coupler. The

transmission and appliance cabinet are susceptible to damage from impacts as the appliance is moved during assembly and shipping. The challenge for the packaging industry has been to design a base that supports the appliance and protects the transmission and cabinet from damage. Prior to the present invention, this was accomplished by various means, including using metal struts or a number of EPS foam pieces that had to be removed after shipping.

[0004] Thus it is an object of the invention to provide an appliance base that secures the transmission and protects it from damage during assembly and shipping, even if the appliance is tilted.

[0005] Another object of the invention is to provide a base that cushions the appliance while it passes over conveyor rollers.

[0006] Yet another object of the invention is to provide a means to secure a washing machine transmission that does not require removal of packaging components upon delivery of the machine.

[0007] Yet another object of the invention is to provide a base that can be used with open sided packaging, i.e., that can be wrapped in stretch film.

[0008] Still another object of the invention is to satisfy the aforementioned objectives in a base constructed primarily of corrugated paperboard.

[0009] Further and additional objects will appear from the description, accompanying drawings, and appended claims.

## **SUMMARY OF THE INVENTION**

[0010] The present invention is a washing machine base that protects and cushions the washing machine and secures the washing machine transmission or other mechanism suspended below the washer tub during assembly and shipping, even if the appliance is tilted. The base is corrugated to provide adequate cushioning to the appliance while it passes over conveyor rollers during assembly.

[0011] The base comprises a tray and an insert disposed within the tray. The tray comprises a flat bottom panel for supporting the washing machine and side panels extending upward from the bottom panel.

[0012] The insert is formed from a cut blank that, when folded, assumes a substantially pyramid shape with an opening at the center for receiving and securing the washing machine transmission. The insert has four sections or legs extending radially from the centrally disposed opening toward the four corners of the tray. Each leg or section comprises a pair of downwardly angled panels connected along a ridge or fold line. Each downwardly angled panel slopes downward from the fold line to an attachment panel that is affixed to the tray. Each downwardly angled panel is also attached by a fold line to an adjacent downwardly angled panel on an adjacent leg. The eight downwardly angled panels (two panels per leg times four legs) define the centrally disposed opening that receives and secures the washing machine mechanism. The centrally disposed opening is raised (elevated) above the tray bottom panel. Optional foam members may be adhered to the tray corners. The foam members and tray define slots for receiving vertical support posts.

[0013] Upon delivery, the base can be easily removed from the appliance in a single piece, thereby eliminating the need to remove multiple packaging components from the underside of the appliance. The base can be used with a top cap, four vertical support posts and clear stretch wrap to create a see-through package. The vertical support posts provide axial compression strength and enable multiple packaged appliances to be stacked on top of one another. The base may be constructed entirely or predominately of corrugated board and so is readily recyclable.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0014] Figure 1 is a perspective view of an appliance base according to the present invention.

[0015] Figure 2 is an exploded perspective view of the appliance base of Figure 1 comprising a tray 12 and an insert 14.

[0016] Figure 3 is a top view of a blank used to form the insert of Figure 2.

[0017] Figure 4 is a top view of a blank used to form the tray of Figure 2.

[0018] Figure 5 is a top view of the appliance base of Figure 1.

[0019] Figure 6 is a perspective view of the appliance base of Figure 1 shown mounted under a washing machine, the washing machine shown in cutaway view to show how the base secures a part of the washing machine suspended beneath the washer tub.

[0020] Figure 7 is a cross-sectional view taken along line 7-7 of Figure 6.

### **DETAILED DESCRIPTION**

[0021] The present invention is described as a base for a washing machine, although it is to be understood that the invention could be used with any appliance or machine that can be supported by a flat base panel but has a centrally suspended portion that must be secured during assembly and shipping.

[0022] Top-loading washing machines typically comprise a wash tub suspended from the appliance cabinet, a central pivoting agitator mounted inside the tub, and a transmission operably connected to the agitator and extending below the tub where it is connected to a motor by a belt or coupler. The transmission is susceptible to damage from impacts as the appliance is moved during assembly and shipping, particularly if the transmission is allowed to swing freely. The present invention is an appliance base 10 which secures the transmission or other mechanism extending below the washer tub to prevent damage to the mechanism during assembly and shipping, even if the appliance is tilted.

[0023] Turning to the drawings, there is shown in Figures 1, 5 and 6 one embodiment of the present invention, an appliance base 10 for cushioning and protecting a washing machine and securing the washing machine mechanism extending below the washer tub during assembly and shipping. Typically, the mechanism is a transmission and/or motor suspended below the tub and operably connected to an agitator mounted within the tub. The base 10 comprises a substantially rectangular tray 12 and an insert 14 mounted within the tray 12 which secures the washing machine mechanism. Preferably both pieces are made from corrugated

paperboard.

[0024] As best shown in Figures 2 and 4, the tray 12 is made from a blank having a rectangular bottom panel 16 and four upwardly extending side panels 18 attached to the bottom panel 16 along fold lines 20. For the purposes of the description and claims, a diagonal is a straight line extending from one corner of the tray bottom panel 16 to the diagonally opposite corner, and an orthogonal line is a straight line lying at right angles to an edge of the tray bottom panel 16.

[0025] To assemble the tray 12, the side panels 18 are folded upright by folding the blank along fold lines 20. Then each side tab 22 is brought into contact with the outer face of the adjacent orthogonally disposed side panel 18 and glued or otherwise affixed thereto. In the assembled tray 12, the bottom panel 16 and each pair of orthogonal side panels 18 define a corner. The side panels 18 provide some protection for the bottom part of the appliance cabinet (see Figure 6) and help secure corner posts (not shown) in place.

[0026] The insert 14 is a complex three-dimensional shape vaguely resembling a pyramid. The insert 14 comprises four sections or legs extending radially from a centrally disposed opening 26 toward the four corners of the tray 12. Each leg comprises a pair of downwardly angled panels 28 connected along a diagonal fold line or ridge 30. As best shown in Figure 5, the diagonal fold lines 30 are aligned with the diagonals of the tray bottom panel 16. Each angled panel 28 slopes downward from the ridge 30 to a horizontal attachment panel 32 that is glued or otherwise affixed to the

bottom panel 16 of the tray 12. The attachment panels 32 are connected to the angled panels 28 along basal fold lines 33. Preferably, the attachment panels 32 are triangular.

[0027] There are eight angled panels 32. Each angled panel 28 is also attached to an adjacent angled panel 28 on an adjacent leg by an orthogonal fold line 34. The orthogonal fold lines 34 are aligned with the orthogonally bisecting lines of the tray bottom panel 16, as best shown in Figure 5.

[0028] The insert 14 may be made by first cutting a blank into the shape shown in Figure 3, including cutting out the centrally disposed opening 26 and perforating the blank to create the fold lines 30, 33 and 34. Next, the blank is folded in accordion fashion along fold lines 30 and 34 and along basal fold lines 33 to create the three-dimensional insert 14 best shown in Figure 2.

[0029] The insert 14 does not bear any of the appliance load. Rather, its sole function is to secure the washing machine mechanism M (Figures 5 and 6) during handling and shipping so that the transmission does not damage itself or other parts of the washing machine.

[0030] After making the tray 12 and insert 14 as described above, the base 10 is assembled by placing the insert 14 within the tray 12 and gluing or otherwise affixing the attachment panels 32 of the insert 14 to the bottom panel 16 of the tray 12. The attachment panels 32 should mate face-to-face with the bottom panel 16.

[0031] As best shown in Figures 5 and 6, the angled panels 28 define the

centrally disposed opening 26 that receives the washing machine mechanism M suspended below the washer tub and stabilizes it during movement. The opening 26 is raised (elevated) above the tray bottom panel 16 and should be just large enough to accommodate the mechanism M, for example, six to seven inches (15 to 128 cm) in diameter.

[0032] Optional foam members 40 may be adhered to or wedged in the corners of the tray 12 to help cushion the appliance and position the vertical support posts (not shown) which fit between the foam members 40 and the tray side panels 18. Openings may be formed in the foam members 40 for receiving appliance feet (see Figure 7). The foam members 40, bottom panel 16 and side panels 18 define slots or spaces for receiving the vertical support posts.

[0033] Thus there has been described a washing machine base that protects and cushions a washing machine and secures the washing machine transmission or other mechanism suspended below the washer tub during assembly and shipping, even if the appliance is tilted. Preferably the base tray is corrugated to provide adequate cushioning to the appliance while it passes over conveyor rollers during assembly. Upon delivery, the base can be easily removed in a single piece, thereby eliminating the need to remove multiple packaging components from the underside of the appliance. The base tray has short side panels so the base can be used with open sided packaging. For instance, the base can be used with a top cap, four corner posts and clear stretch wrap to create a see-through



package. The corner posts provide axial compression strength and enable multiple packaged appliances to be stacked on top of one another. The base may be constructed entirely or predominately of corrugated board and so is readily recyclable.

[0034] Other modifications and alternative embodiments of the invention are contemplated which do not depart from the scope of the invention as defined by the foregoing teachings and appended claims. It is intended that the claims cover all such modifications that fall within their scope.